Commercial Harbor Craft
Proposed Regulation Workshop
Sacramento
July 27, 2006
California Environmental Protection Agency
Air Resources Board

Overview

♦ EPA Marine Engine Categories
♦ Proposed Regulation
♦ Alternative Compliance Plan
♦ Definitions
♦ Testing
♦ Outstanding Issues
Categorizing Vessels

- Tug/Tow and Ferries
- Crew, Supply, Pilot, Work, and Other Vessels
- Fishing Vessels

National Marine Engine Standards
Marine Engine Standards

- Tier 0 Engines are unregulated
- Tier I Marine Engine Standards are voluntary compliance with MARPOL Annex VI NOx limits
- US EPA has promulgated Tier II Marine Engine Standards 40 CFR 94
- Tier III are not yet promulgated
  - Expecting a 90% reduction of PM and NOx from Tier 0

Category 1 Engines
Emission Reductions by Tier

<table>
<thead>
<tr>
<th>Category 1</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NOx</td>
<td>PM</td>
</tr>
<tr>
<td>Tier 0</td>
<td>Tier I</td>
<td>-28%</td>
</tr>
<tr>
<td>Tier 0</td>
<td>Tier II</td>
<td>-47%</td>
</tr>
<tr>
<td>Tier 0</td>
<td>Tier III</td>
<td>-90%</td>
</tr>
<tr>
<td>Tier I</td>
<td>Tier II</td>
<td>-26%</td>
</tr>
<tr>
<td>Tier II</td>
<td>Tier III</td>
<td>-81%</td>
</tr>
</tbody>
</table>
Category 2 Engines
Emission Reductions by Tier

<table>
<thead>
<tr>
<th>Tier I</th>
<th>Tier II</th>
<th>Tier III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 0</td>
<td>-28%</td>
<td>-90%</td>
</tr>
<tr>
<td>Tier 0</td>
<td>-37%</td>
<td>-90%</td>
</tr>
<tr>
<td>Tier I</td>
<td>-14%</td>
<td>-84%</td>
</tr>
<tr>
<td>Tier II</td>
<td>-83%</td>
<td>-83%</td>
</tr>
</tbody>
</table>

Non-Fishing Vessel Fleet
Non-Fishing Fleet

- Two Broad Categories
  1) Tug/Tow, and Ferries
  2) Work, Pilot, Crew, and Other

- Different requirements for the categories

Tug/Tow and Ferries
Phase 1

Existing Tier 0 or Tier I Engine

- (O-1) Install Highest Level VDEC
- (O-2) Install Tier II Engine
- (O-3) Document Tier II Equivalency

Compliance Dates 2008 - 2013
**Tug/Tow and Ferries Phase 2**

If Installed VDEC (O-1) or Documented Tier II Equivalency (O-3)

- Install Tier III Engine
- Document Tier III Equivalency

Compliance Dates 2013 - 2018

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**Tug/Tow and Ferries Phase 2**

If Installed Tier II Engine (O-2)

- Install Tier III Engine
- Document Tier III Equivalency

Compliance Dates 2016 - 2021
Work, Pilot, Crew, Other Non-Fishing Vessels
Phase 1

Existing Tier 0 or Tier I Engine

(O-1) Install Highest Level VDEC

(O-2) Install Tier II Engine

(O-3) Document Tier II Equivalency

Compliance Dates 2008 - 2013

Work, Pilot, Crew, Other Non-Fishing Vessels
Phase 2

If Installed VDEC (O-1) or Documented Tier II Equivalency (O-3)

Install Tier III Engine

Document Tier III Equivalency

Compliance Dates 2013 - 2018
Work, Pilot, Crew, Other Non-Fishing Vessels
Phase 2

If Installed Tier II Engine (O-2)

Install Level 3 VDEC  Install Tier III Engine  Document Tier III Equivalency

Compliance Dates 2016 - 2021

Fishing Vessels
Fishing Vessels

♦ Fishing
  – Commercial Fishing
  – Commercial Passenger Fishing
♦ Approach designed to maintain level of Moyer availability

Fishing Vessels

Existing Tier 0 Engine

Install Level 1 VDEC

Document 25% PM Reduction

Compliance Dates 2008 - 2016
Fishing Vessel Compliance

♦ Vessels with certified engines will be in compliance

Fishing Vessel Issues

♦ Economic Impacts
♦ Limited Strategies Available
♦ Technical Feasibility
♦ ARB staff evaluating other requirements for higher use vessels
Alternate Compliance Plan

♦ Engine Modifications
♦ Exhaust Treatment Control
♦ Engine Repower
♦ Alternative Fuels or fuel additives
♦ Shore Side Power
♦ Fleet Averaging

Compliance Extensions

♦ Engine Near Retirement
♦ No Verified Technology
♦ No Engine Available
♦ Experimental Technology
Changes to Definitions

♦ Regulated California Waters
♦ Tier 3 Engines

Test Methods

♦ ISO 8178
♦ Test Cycles
  – E3 – Propulsion Engines
  – D2 – Auxiliary Engines
♦ Fuel Correction Factors
♦ Reporting Requirements
Outstanding Items

- Economic Impacts
- Compliance Timelines
- Sell Through Provisions
- Applicability with other ATCMS
- EPA Rulemaking
- Low Use Exemptions
- Tech Assessment

Next Steps

- Next Workshop Aug. 30, 2006
- Workshop Early – Mid Sept.
- Release Initial Statement of Reasons
- Board Date November
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